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TRIDENTELLA RECAVA, A NEW ISOPOD FROM TILEFISH BURROWS IN THE NEW YORK BIGHT (FLABELLIFERA: TRIDENTELLIDAE)

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Abstract.—*Tridentella recava,* n. sp., described from tilefish burrows at depths of 180–304 m on the New York Bight, is characterized by its large size (up to 25.8 mm), its excavated telsonic apex, and the spines on the margins of the uropods. It lives in secondary burrows within the tilefish burrows.

The tilefish, *Lopholatilus chamaeleonticeps* Goode and Bean, a large fish reaching 60 pounds is the object of a major fishery along the east coast of the United States and the Gulf of Mexico. It occurs on the outer continental shelf at depths between about 100 m to more than 300 m, and is restricted to a rather narrow band of bottom water that remains between 9–14°C year round. It constructs burrows whose function appears to be to provide refuge from predators. Several species of crustaceans and fishes are associated with the tilefish burrows (Able et al. 1982, Grimes et al., in press). The isopod described below is a previously undescribed associate in tilefish burrows.

Family Tridentellidae Bruce, 1984
Genus *Tridentella* Richardson, 1905
Tridentella recava, new species
Figs. 1–3

Material.—All collected with the R/V *Johnson Sea Link II.*—Dive 901, sample 3, 40°00.91′N, 70°05.79′W, 242–304 m, 29 Jul 1984: juv. ♂ 9.9 mm; juv. ♀ 10.1 mm, USNM 227074.—Dive 906, sample 10, 40°01.05′N, 70°20.98′W, 196–230 m, 31 Jul 1984: 2 ♀ without oostegites, 20.0 and 24.6 mm, USNM 227073.—Dive 909, sample 6, 40°02.96′N, 70°20.84′W, 180–195 m, 2 Aug 1984: 2 ♀ without oostegites, 24.1 and 25.0 mm; ♂ 20.5 mm; ♂ in 2 fragments; 4 mancas, 5.9, 6.0, 6.3, and 6.3 mm, USNM 227072.—Dive 909, sample 8, 40°02.69′N, 70°21.35′W, 180–195 m, 2 Aug 1985: ♀ without oostegites, 25.2 mm; juv. ♀ 10.2 mm; juv. ♀, damaged; ♂ without head, USNM 227071; ♀ with empty marsupium, 25.8 mm (holotype, USNM 227070). All specimens listed, except the holotype, are paratypes.

Description.—Length up to about 26 mm, about 2.4× as long as wide. Head with small pointed rostrum meeting frontal lamina and slightly separating bases of antenna 1. Eyes large, with well developed facets. Pereonite 1 with complete transverse furrow; pereonites 2–3 with lateral furrows. Coxae 2–3 rounded posteriorly, not produced posteriorly; coxae 4–7 progressively more pointed and produced posteriorly, coxa 7 reaching pleonite 3. Pleonites 1–3 progressively wider and more produced posteriorly; pleonite 4 about as wide as pleonite 3, produced posterolaterally to midlength of peduncle of uropod. Pleonite 5 covered laterally by pleonite 4. Pleotelson nearly 1.5× as wide as long, subtriangular; lateral margins slightly convex, armed with short setae; apex with U-shaped excavation, base of excavation crenulate, with short setae between the crenulations. Antenna 1 peduncle segment 3 about 1.7× length of segments 1 and 2 combined; flagellum about 21-merous, segments distal to segment 4 each bearing 2–3 esthetes. Antenna 2 reaching pereonite 3 or 4; peduncle segment 5 about ⅓ longer

Fig. 1. Clay from margin of tilefish burrow, collected from submersible by grab sampler on manipulator arm and broken to show *Tridentella recava* in its burrow.

than segment 4; flagellum with about 34 segments.

Frontal lamina pentagonal, moderately elongate. Clypeus narrow, extending laterally well beyond labrum; latter with convex free margin. Mandible with narrow 2-pronged incisor; molar triangular, fleshy, with hirsute margin; segment 2 of palp with several rows of long setae on distal ⅔; segment 3 with closely spaced row of shorter setae and a few longer apical setae. Maxilla 1 exopod with 5 long terminal spines and 5 short subterminal spines; endopod less than half length of exopod, with 2 short subterminal setae. Maxilla 2 apex with about 5 scalelike spines with 3 or 4 teeth; proximal to these a patch of smaller bicuspid spinules. Maxilliped with narrow endite bearing a few terminal setae, reaching distal margin of palp segment 3.

Pereopods 1–3 similar, prehensile; pereopod 1 somewhat stouter than pereopods 2–3. Carpus with strong spine on posterodistal corner; posterior margin of merus with row of shorter spines. Pereopods 4–7 slender; distal corners of segments, except basis, with groups of long spines.

Pleopod 1 exopod with proximal spine on lateral margin. Pleopods 1–5 with 8, 7, 7, 6, 0 retinacula. Exopods of pleopods 3–5 divided by transverse suture. Appendix masculina of pleopod 2 widening distally into lanceolate tip reaching slightly beyond distal margin of endopod.

Uropods reaching beyond telson, endopod slightly longer than exopod, both rami rather narrow, pointed, margins armed with a few spines and close-set rows of setae.

Etymology.—From the Latin "recavus," hollowed or arched inward, referring to the apex of the telson.

Comparisons.—*Tridentella recava* is easily distinguished from the 10 known species of the genus (listed in Delaney and Brusca 1985) by its smooth pleotelson with an excavated apex. Seven of the 10 species have highly ornamented pleotelsons, and the three species with smooth telsons have smoothly rounded entire pleotelsons. Marginal spines on the uropods are found in *T. laevicephalax* Menzies (see Carvacho 1977), *T. quinicornis* Delaney and Brusca, 1985, and *T. recava,* but not in other species of *Tridentella.*

Tridentella recava is by far the largest known species, with a length of up to 25.8 mm. The other species range in length from 9 mm (*T. virginiana* [Richardson, 1905]; *T. japonica* Thielemann, 1910) to 20 mm in *T. ornamenta* (Menzies and George, 1972).

Remarks.—Thanks to the insight of Bruce (1984), *Tridentella* has been retrieved from the family Corallanidae, in which it had remained since 1905, and deservedly given its own family. Bruce's discussion of the features of the new family is clear and concise, except for the molar of the mandible. He describes the molar as "present," but in table 1 he states "molar vestigial." Elsewhere he says that the mandible is "essentially similar" to that of the Aegidae. The mandible of the Aegidae lacks a molar. Ac-

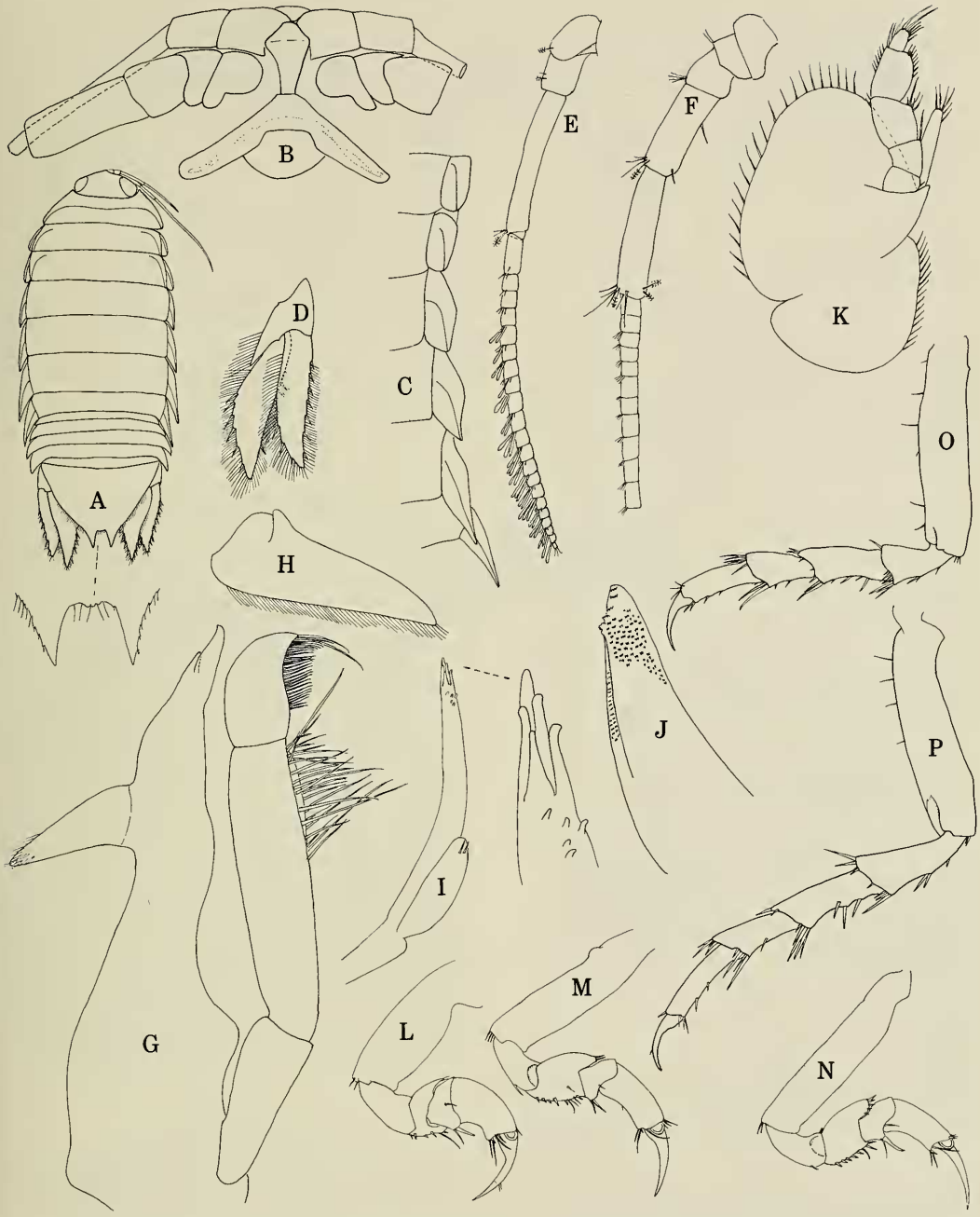

Fig. 2. *Tridentella recava,* 25 mm ♀, dive 909, sample 6: A, Habitus, dorsal; B, Head, ventral; C, Coxae 2–7, lateral; D, Uropod, ventral; E, Antenna 1; F, Antenna 2, proximal segments; G, Right mandible; H, Molar of right mandible; I, Maxilla 1; J, Maxilla 2; K, Maxilliped; L–P, Pereopods 1–5.

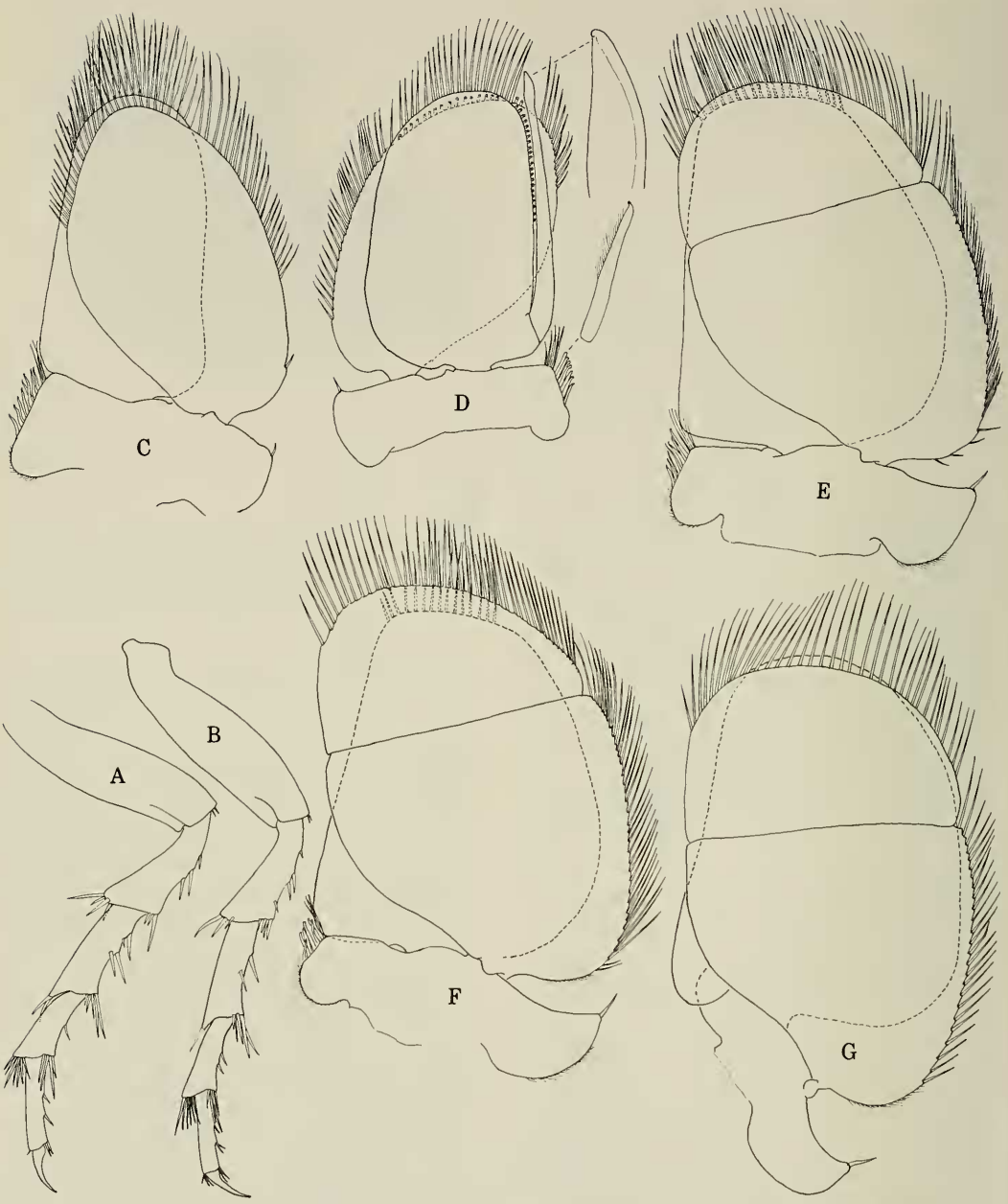

Fig. 3. *Tridentella recava,* A–C, E–G, 25 mm ♀, dive 9, sample 6; D, 20.5 mm ♂, dive 9, sample 6; A, Pereopod 6; B, Pereopod 7; C–G, Pleopods 1–5.

tually, as pointed out by Delaney and Brusca (1985), the molar in the Tridentellidae is essentially like that of the Cirolanidae, in which it is conical, fleshy, spinose on one margin, and sometimes setose. It cannot cut or grind, and presumably its function is to push food into the mouth. Its structure is clearly specialized, i.e. apomorphic, a fact overlooked by systematists who state that the Cirolanidae have generalized mouthparts.

Habitat.—*Tridentella recava* was found

in secondary burrows within the tilefish burrows. Clumps of clay collected showed isopod burrows of two kinds: larger burrows about 5.0 mm in diameter with a distinct whorled pattern of narrow marks resulting from excavation; smaller burrows about 2.0 mm in diameter without distinct excavation marks on the walls. These burrows are occupied by large and small specimens of *T. recava,* respectively. A third kind of burrow, 8–10 mm in diameter with excavation marks larger in scale and more widely spaced, may be produced by a goneplacid crab that is associated with tilefish burrows.

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Literature Cited

Able, Kenneth W., Churchill B. Grimes, Richard A. Cooper, and Joseph R. Uzmann. 1982. Burrow construction and behavior of tilefish, *Lopholatilus chamaeleonticeps,* in Hudson Submarine Canyon.—Environmental Biology of Fishes 7(1):199–205.

Bruce, Niel L. 1984. A new family for the isopod crustacean genus *Tridentella* Richardson, 1905, with description of a new species from Fiji.—Zoological Journal of the Linnean Society 80: 447–455.

Carvacho, Alberto. 1977. Isopodes intertidaux de côtes du centre et du Nord du Chili. I. Familles des Cirolanidae, Excorallanidae et Corallanidae.—Crustaceana 32(1):27–44.

Delaney, Paul M., and Richard C. Brusca. 1985. Two new species of *Tridentella* Richardson, 1905 (Isopoda: Flabellifera: Tridentellidae) from California, with a rediagnosis and comments on the family, and a key to the genera of Tridentellidae and Corallanidae.—Journal of Crustacean Biology 5(4):728–742.

Grimes, Churchill B., Kenneth W. Able, and Robert S. Jones. [In press]. Tilefish, *Lopholatilus chamaeleonticeps,* habitat, behavior and community structure in Mid-Atlantic and southern New England waters.—Environmental Biology of Fishes.

Menzies, Robert J., and Robert Y. George. 1972. Isopod Crustacea of the Peru-Chile Trench.—Anton Bruun Report Number 9:9.1–9.124. (Texas A&M Press.)

Richardson, Harriet. 1905. A monograph on the isopods of North America.—Bulletin of the United States National Museum 54:I–LIII, 1–727.

Thielemann, Martin. 1910. Beiträge zur Naturgeschichte Ostasiens. Herausgegeben von Dr. F. Doflein. Band II, No. 9. Beiträge zur Kenntnis der Isopoden fauna Ostasiens.—Abhandlungen der Mathematisch-Naturwissenschaftlichen Klasse der K. Bayer. Akademie der Wissenschaften, suppl. vol. 2, Abhandling 3:1–109, pls. 1–2.

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